

Burwell (Geo. M.)

OF THE

USE OF CHLOROFORM IN MIDWIFERY.

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REPORT OF THE PHYSICS DEPARTMENT

USE OF CHLOROFORM IN MIDWIFERY.

(Read at the annual meeting, February, 1853.)

It is now nearly five years since I commenced the use of chloroform for the relief of the pains of labor. During that period I have given it to a total of one hundred and eighty cases, and having administered it as I trust, carefully and thoughtfully; and considering the variety of opinion as to the safety of the remedy and the propriety of its use, with a due sense of the responsibility I was incurring, I have felt it due, not only to the friends of the remedy but also to those who, except upon extraordinary occasions, condemn its employment, to spread out my experience before them as fully and completely as I myself know it.

In the first place, I shall not here discuss the propriety of ever giving chloroform, for I am well aware that some of the highest authority in the land condemn its employment on the ground that its use is never free from the danger of sudden death, that you cannot touch it without the liability of being struck to the earth as with the lightning's flash. I must beg that question here, for its discussion would of itself afford ample material for a separate paper, and would draw me from the objects I have at present in view.

I assume then, that in ordinary cases, and in ordinary doses, chloroform may be safely administered. This granted, my object in this paper is, in the first place, to give statistical results upon the most important points of the cases in which I have given it; in the second place, to give at some length an account of its effects, as I have noticed them, upon the symptoms and progress of labor, with such illustration and anomalous cases

as will throw light upon its use, or put us upon our guard as to its dangers; and in the third place, to give in considerable detail, the rules by which I am governed in its use, with an account of my mode of administration, and the doses which I consider may be safely and warrantably given.

SECTION I.

STATISTICS.

Total number of cases in which chloroform was given for a greater or less length of time,.....	180
Number of cases where the relief obtained from the chloroform was decided,.....	122
do do where the relief was moderate,	55
do do where there was no relief,	3
Longest time in which it has been continuously administered to the patient,.....	14 $\frac{3}{4}$ hours
Average duration of administration to each patient, about	1 "
Number of cases which have been terminated by the forceps,.....	17
do do of craniotomy,.....	1
do do turning,	1
do do first labor,	88
do do still-born child'n (in 13 labors.)	14
do do flooding,	7
do do inflammation, recovered,.....	5
do do do died,	1
do do bad health, succeeding the confinement,	25

Some remarks upon each of these points will be necessary to their full appreciation.

Of the cases in which the relief was decided.—Under this head I place those cases in which the pain was always greatly diminished, and occasionally all taken away. In thirty-seven of these cases the patients were entirely insensible to the birth of the children. The remainder not only expressed themselves greatly relieved, but in most instances gave other evidences of it, as by

calling for more of the remedy ; going to sleep in the intervals of pain, and in many ways appearing quieter and easier. There were frequently in these cases terms of transient insensibility, or of delirium, after a fresh breathing of the chloroform ; but I do not for that reason put them in the list of cases of total insensibility, as I place none there to whose insensibility there was not some depth and duration.

Of the cases in which the relief was moderate.—Under this head I classify, 1st: A few cases in which there was no call for the remedy ; but little diminution of the cries or of the other appearances of suffering, and of course entire sensibility to the birth of the children. These, when taking it, if pressed for an answer, would say it relieved them : if asked if they wanted more, would say yes ; but if I discontinued it, would not inquire for it. Were it not that I judged from their actions (they even occasionally going to sleep in the intervals of pain), I should say they obtained no relief. 2d. I place here some who, on the contrary, have expressed greater relief than I have given them credit for. Judging rather from my impressions from the observation of the cases, and the small quantity of the chloroform they had taken, I concluded they expressed themselves too strongly, and therefore placed them on this list. 3d. A large proportion of the cases classified here, are those who took the remedy only from five to fifteen or twenty minutes before the conclusion of the labor ; and although relieved, had no opportunity of experiencing that decided relief, which the longer use of the remedy would have afforded.

Of the cases which derived no relief.—One was a large, hearty woman, in labor with her third child. She is always severely and tediously sick. I thought it a good case for the use of chloroform, but did not succeed in bringing her into a state of anaesthesia, nor would she acknowledge she derived the least relief from it. I thought I made a fair trial, having given a quantity that I know, by frequent trials, would have put me soundly asleep. The second case was one who had been sick for some weeks, and who tried her best to breathe it ; but with all the instructions I could give her, she did not learn to inhale it freely.

Still, two or three times I thought she got enough to have some effect; but as she said not, I declined giving more. In the third case I had an opportunity to make only a moderately good, but unsuccessful trial, when the birth of the child prevented further attempts.

Of the case in which chloroform was given for 14 $\frac{3}{4}$ hours.—It was that of a delicate woman with her first child. She had been nearly 2 $\frac{1}{2}$ days in constant pain when its inhalation was commenced. She did not require much at a time to ease her pains. Three ounces were consumed, which, when we consider the length of time it was being given, shows the smallness of the dose used. The labor was finally terminated with the forceps. The relief obtained from the chloroform during that tedious day may be judged of by her remark when I announced to her the necessity for the use of the instruments: "Well, doctor, just as you are of a mind to, if you will give me plenty of chloroform." It is hardly necessary to add that it was given according to her wishes, and the child taken away without there being, on her part, the least sensibility to the operation.

Of the seventeen Forceps cases.—Five were rendered totally insensible at the time of the operation. The delivery was rapid, requiring in each but two or three efforts at traction. In four cases chloroform was given during the operation, but not to full anaesthesia. In eight cases chloroform had been given some time during the progress of the labor. Four were cases of complication and danger, and it was discontinued that any unpleasant results which might happen should not be referred to it. In the remaining four cases the delivery was slow, and required my whole attention without the distraction which would result from watching also the use of the chloroform.

Of the seventeen cases, fourteen were first labors.

Of the case of Craniotomy.—This was necessary on account of mal-position and impaction of the head within the pelvis. The woman, during a portion of the labor only, had chloroform, but with only partial relief, as it was not freely administered. None was given during the operation.

Of the case of Turning.—The following case of turning is the only one in which I have given chloroform. The woman was a patient of Dr. Dayton, of Black Rock. He was hastily summoned to her in the morning of August 11th, 1849. He found that the waters had escaped while she was on the close-stool, and the child's right hand was protruding into the world. The patient finding that something was wrong, and thinking herself certain to die, notwithstanding the Doctor's assurances of her entire safety, gave herself up to the most immoderate weeping, and other evidences of excessive grief. Dr. Dayton attempted to turn the child and deliver, but such was her restlessness and violent outcries, that he desisted and sent for me. It was four hours after the coming down of the hand before I reached the house. The woman had in a great measure got over her alarm, and was waiting very patiently. There had been no return of pain during all this time. The prolapsed member was much swollen; a spasmodic contraction of the fingers on my taking hold of the hand, proved the child to be living.

After having her properly placed, Dr. Dayton administered the chloroform slowly, but in a full dose, so she soon became entirely anaesthetized, when the sponge was removed. Not over twelve or fifteen minutes were occupied in turning and delivering the child. It was accomplished with great ease, although the limbs were so folded upon themselves that I had to reach into the very fundus of the womb before I could conveniently seize one limb. The child turned readily, and the arm gradually receded, but not entirely, until I had withdrawn the left foot (so the right hand and left foot were at the same instant without the vulva), and soon afterwards the child was delivered living. The patient laid in the most quiet manner all this time; she did not utter a single cry or moan. Once she became for an instant a little restless, but three or four additional inspirations of the chloroform perfectly quieted her. There was no perceivable contraction of the voluntary muscles during the delivery. The uterus contracted down well, and the after-birth was delivered in due time, and without hemorrhage. The patient did not wake from her sleep for some four or five minutes after the child was born. She recovered without a bad symptom.

It has been my lot a number of times to deliver by turning, but never before have I accomplished it, at the full time, with one-half the ease and rapidity I was enabled to do in this case.

First labors—88 cases.—The large proportion of cases of first labor relative to the whole number of cases of labor, as they occur in ordinary practice, conclusively shows that in the choice of cases for the use of the remedy, I have been governed solely by their tediousness and severity. In but a few instances have I yielded to the wishes of my patients, and given it to those who were not suffering with considerable severity. In fact, except in refusing to give it in some cases where I apprehended sickness. I have never made any selections as such, of cases in which to administer it.

Still-born children—14 cases.—*One* was after delivery by craniotomy. *Two* were delivered putrid. *One* was an extraordinarily large child, which presented the breach where delivery was very slow, especially in the extraction of the head. Chloroform was not given at the time of delivery, nor had it been for an hour or more before. 1. *Two* were twins, at four or four and a half months. *One* died from prolapsus of the cord. *Two* were hydrocephalic children, and both with spina bifida. *One* was a child delivered by the forceps, and which had undoubtedly been dead for some hours. *One* died during a labor which was uncommonly severe and prolonged, from a slow dilatation of the vagina and rigidity of the perineum. Chloroform was given for some nine hours. It was a first labor and the child was large. *Two* of the children were two or three months premature. In the second of these, death was undoubtedly caused by the separation of the placenta, which was the first and exciting cause of the labor itself. In the other, no cause can be given why the child was perfectly still-born, it being only two months premature. The *fourteenth* was a child also perfectly still-born, but in which no cause could be assigned.

Besides these, two children lived 24 and 36 hours, respectively, after birth. The first was an acephalous child (and curiously enough, this want of a brain has actually been laid to the chloroform), and the other was a case of severe labor, in which delivery

was accomplished by the forceps. The child was badly asphyxiated, but after an hour's assiduous attention, got to breathing tolerably well; but the next day it took spasms and died. Its pulse was never very perceptible at its wrist.

In judging of the effect of chloroform upon the child, the case of its use for $14\frac{3}{4}$ hours ought to be borne in mind, as well as a case in which it was given over five hours, and the patient's system became so saturated with it, that I detected it in her breath one hour after the conclusion of the labor. In both of these cases, the children cried out lustily the instant of birth.

Flooding after the use of chloroform — seven cases.—The cases of flooding admit of being divided into two classes; first, those in which it occurred before the delivery of the placenta, from its partial separation; and second, those which were caused by want of a firm, tonic contraction of the uterus. Three of the seven cases come under the first head, and four under the second. Of the first class, *one*, after a natural and easy labor, flooded frightfully. The flowing came on immediately on the birth of the child. Scarcely waiting to tie the cord, I introduced my hand, and delivered the placenta. The whole time from the delivery of the child to that of the placenta was scarcely three minutes; but the flooding was so severe, and the faintness so prolonged, that for an hour afterwards I was seriously alarmed lest I should lose my patient. She had had a similar flooding on the birth of the child before this, but had not informed me — this being the first time I had attended her. She got along very well for a few days, when she was attacked with phlegmasia dolens, which also she had had after the previous confinement, but when she did not have chloroform. The only reason chloroform was given this time was because she wanted it, and I saw no objections to her having it.

The second case was very similar to the first, except the flooding was not so severe, nor the faintness so great, nor was there any phlegmasia dolens.

The third case was one where the patient had been confined to her room by sickness for some days. Her labor proving tedi-

ous, and seemingly to her unbearable, notwithstanding her sickly condition, I gave her chloroform for two hours before the birth of the child. The flooding required the manual delivery of the placenta, after which, for an hour, there was quite a free discharge. Her own health was such that she was not allowed to nurse her child, but after a rather tedious convalescence she quite recovered her health.

Of the four cases belonging to the second class, the first was very severe from the difficulty of securing the contraction of the uterus, and gave me considerable anxiety for a while. The labor had been severe, and she had taken pretty freely of chloroform. She was one who always flooded badly after labor, but which at the time, I did not know. In none of the three other cases was it severe enough to create anxiety, except in so far as we dislike to see such losses of blood from its likelihood to weaken our patients.

In August, 1849, I gave chloroform to a patient also subject to hemorrhage. It was her third confinement. She had flooded badly after each of the previous ones. I administered pretty freely of an infusion of ergot in the intervals of the pains, besides giving the chloroform, and succeeded both in preventing the flooding and in easing her pains.

Hysteritis after the use of Chloroform—six cases.—In one case peritonitis supervened upon hysteritis, and the patient died six and a half days after labor. She was an exceedingly frail woman, and had suffered daily for six months before labor. Three or four times during this period, she had such severe and continued pain that she was thought certainly to be about to miscarry. Her labor was very sharp and painful. Chloroform was given with great relief for three hours before its termination. Once having experienced the relief it afforded, she would not do without it. She appeared very well the next day, except in having too great a warmth of surface and a pulse at one hundred. The next day after this she got severe pains through the pelvis, which rapidly extended over the bowels with all the signs of peritonitis. No efforts accomplished more than partially to re-

lieve her. This is the only case within my experience which has proved fatal after taking chloroform.

One case had puerperal fever, but apparently uncomplicated with inflammation. The left groin was the only seat of any local pain. She was fully depleted and gradually recovered. She took chloroform for half an hour.

One case had hysteritis only moderately, and it was easily controlled by remedies. She took chloroform freely for two hours.

Three had hysteritis severely, and were all at some period of their sickness, in great danger. The one most severely sick took chloroform not over fifteen minutes, just at the close of the labor. Another was after the operation of craniotomy; chloroform had not been freely given. The last one of the three took chloroform for some hours, and was finally delivered with the forceps.

A case of phlegmasia dolens is referred to under the head of cases of flooding.

These are the only cases I have seen of inflammation of any of the internal organs of the body after the use of chloroform.

Of bad health after the use of chloroform—25 cases.—It has often been said that women do not have a good getting up after the use of chloroform. I have carefully scanned my list, for all, as far as I know, who have not done perfectly well after its use. I make out a list of twenty-five cases. These I classify as follows:

1st. Those who not only had been sick previous to confinement, but were sick at the time, 9 cases.

2d. Those who suffered afterwards from a great degree of constipation, 2 cases.

3d. Those whose convalescence was protracted after flooding, 2 cases.

4th. Those who always became feeble when nursing, 1 case.

5th. Those who suffered from prolapsus uteri, 1 case.

6th. Those who had had long and severe labors and recovered slowly the first four or five weeks, 4 cases.

(Three of these were forceps cases.)

7th. Those who were kept sick and feeble for three or four weeks from abscess of the breast, 2 cases.

8th. Those who were feeble after having had hysteritis, 4 cases.

Of these twenty-five cases, one died three years ago of epidemic dysentery (three months after having taken chloroform), and one died last summer of cholera (nine months after taking it). These are the only deaths in this list. Of the remainder, one is now suffering from a scrofulous abscess of the neck ; it first showed itself six months after her confinement. Two have had some cough, and both being of feeble constitutions, give me some anxiety about their future health. One has moved to the west, and I believe her to be well. The other nineteen cases I know all to be in good health.

My own opinion is that in not one of these instances ought the ill health to be charged to the use of the chloroform.

I have seen many instructive illustrations of this disposition to refer any unpleasant symptom to the use of chloroform, of which two or three may as well be detailed here: A woman whom I was attending last summer wanted chloroform, but on account of her husband being fearful of its safety, it was not given. Two or three months afterwards she was complaining to me of her eye-sight being dim, and said it had been so ever since her sickness. Had she taken chloroform, both herself and friends would, in all probability, have attributed it to that, and not the least weight would have been given to any doubts or denials I might have expressed or made. Another, who was only prevented from taking it by my absence, had, two hours after the labor, a dizziness and entire loss of sight for a few minutes, which quite alarmed her. She confessed she would have attributed it all to chloroform had she taken it. I was lately consulted by a patient who is threatened with a rapid decline, and who refers the commencement of her ill health to the time of her first confinement. She has never since been as well as she was before. I was thankful she had not taken chloroform. The truth is, that like the mercurials and the sulphate of quinia, it will have to bear, both now and hereafter, a deal of obloquy and evil report wholly unmerited.

SECTION II.

OF THE EFFECTS OF CHLOROFORM UPON THE SYMPTOMS AND PROGRESS
OF LABOR.

First, of its effects upon the mental faculties.—In a large proportion of the cases, chloroform was not given so freely as more than momentarily to obliterate them. The patients may be said to have remained sensible during the whole time of its administration. In some this sensibility was acute and lively, while in others, although they afterwards asserted that they knew everything which occurred even to the birth of the child, they lay in such a quiet, drowsy condition, that frequently at the time I thought them insensible. I use the term insensibility here in reference to the condition of the mind and senses, and not in reference to the existence of pain. When in the first condition, they always declared their relief; called for more chloroform as the pain was coming on; frequently said when they had enough to benumb the pain; and even occasionally held the sponge themselves to breath of; and thus continued until the birth of the children. In the second condition, they laid in the intervals of pain more as if asleep, always waked out of it, of course, by the recurrence of pain. When the pain had passed off, I have often heard such declarations as “how delightful,” “how easy I am,” “what a relief,” &c. If I was careful to repeat the inhalation before every pain, it was not often asked for; but if I neglected it, it would very soon be inquired for.

A condition of mind often connected and alternating with the state just described is delirium. This has indicated a degree of anaesthesia, sufficient, while it continued, to cause insensibility to pain, and to take away all recollection of the labor. It varied much in different cases, amounting in some cases only to a little muttering, where I could only occasionally catch a well articulated word; in others there would be a distinct pronunciation of words and sentences. The subject was almost always foreign to anything which would naturally have suggested itself, and it was almost always one of an unpleasant nature—something which excited grief, and occasionally tears. One fancied that her hus-

band was in confinement; another, that her child would be killed; one was disposed to be hysterical and to weep; another was greatly grieved that a friend she wished to see was not present, nor would assurances, that the person she was calling for was with her, seem to satisfy her. One who was taken with pain prematurely, from fright the day before, got while riding, was fancying continually that the horses were just about to run, and spoke of their acting badly, kicking, putting their ears back, &c. These ideas would keep in her mind continually, when under the influence of the chloroform. Three or four times the subject has been pleasant. One patient only, a very amiable woman, as far as I know, was made exceedingly cross and petulant by it, so much so, that on this account alone I discontinued it, but resumed it at her solicitation, after she had become again sensible to pain. I have never, in any case, seen any delirium sufficiently violent to require a suspension of the remedy; never any raving or violent hysterical symptoms; never any symptoms of coma or stertor.

An anomaly connected with the condition of the mental faculties, difficult to understand, and of great importance as it seems to me is the entire loss of all recollection of the labor, almost from the first inhalation of chloroform, and yet during labor perfect sensibility as to the condition of the mental faculties and senses, and perfect sensibility not only to the existence of pain, but also to the relief derived from the chloroform itself. In four cases have I seen this combination of facts well marked; and so necessary does it appear to me that they be fully impressed upon the mind of whoever gives chloroform in midwifery, that I make no apology for inserting them in detail here. The first and second cases have before been published in the "Buffalo Medical Journal," vol. 4th, pages 336 and 338; and the third and fourth cases in the same work, vol. 5th, page 445 to 447, inclusive, as follows:

Case 1. Mrs. K.—She had some severe pain a fortnight before her confinement, which I felt threatened premature delivery. The morning of the day on which she was confined, she sent for me on account of an attack of diarrhea and pain. By noon both were arrested, and she lay entirely comfortable until 5 o'clock P. M., when some pain in the back came on, preceded by a little flowing; the pains increased and soon became regular labor

pains. I was sent for at 8½ o'clock in the evening. I found the pains returning regularly every five minutes; the os uteri was dilated to an inch in diameter. I left her to return at ¼ before 10 o'clock. The os uteri was then nearly two inches in diameter; the bag of waters well formed; the presentation of the child, the first position of the vertex. From 10 to 10¼ o'clock I counted the pains, there were six of them, lasting each from one to two minutes. I then commenced the administration of chloroform in moderate doses. She breathed it with the greatest avidity; held the sponge herself; said she scarcely felt her pains. But after inhaling it a few times she complained of nausea, and asked for something to vomit in; a vessel was handed to her, and she vomited moderately. She soon after called for the chloroform again, and took the sponge herself. She would hold it first to one nostril, and then to the other, snuffing it as eagerly as an old snuff-taker would a good pinch of snuff. At times she complained that I did not give her enough of it. After ten minutes had passed in this way, she seemed a little wild and hysterical; talked of her husband as being confined somewhere, and of her trust in me to let him out; she even seemed disposed to weep about it. I discontinued the chloroform for one or two pains (which continued just as frequently and forcibly as before she breathed of it at all), when she really complained so much of my not giving it to her, that I again allowed it. It was during this time that I directed a cup of tea for her. I myself poured it from the cup into the saucer, while she raised herself on to her elbow, and drank of it until the cup was emptied.

All this time I certainly supposed her to be sensible of her pains; but only partially so, for I could see plainly enough by her actions, that after a few inhalations just as the pain was coming on, she did not suffer that sharpness of pain which she did when not under its influence, and she was herself continually saying how it relieved her pains; that she did not suffer from them as before.

The labor went on very rapidly. It really seemed that the dilatation was more rapid than it would have been without the chloroform, although of this there must be doubt. At 10½ o'clock, there being full dilatation, I ruptured the membranes. In five

minutes more the head had got low down into the cavity of the pelvis, when I asked her to turn from her back, on to her side. This she did immediately without any assistance.

She still continued in distress about her husband, fancying that he was about to desert her ; said something about our destroying the child ; and continued to make considerable outcry during the pains, although the chloroform was given her at every pain. I had no doubt in my mind of her sensibility to all that was going on. Finally at $\frac{1}{4}$ to 11 o'clock the child was born. It was her second child, was quite small, and according to her reckoning, was one month premature.

There were but very moderate after pains ; no flooding. She did not sleep any that night ; had a constant head-ache, for which she kept her head bathed in spirits of camphor. The want of sleep at night was usual to her for some weeks before ; the head-ache was not common.

The diarrhea returned the next day, but was finally subdued in three or four days, and she soon after became well and hearty.

On careful inquiry the next day, I found that she scarcely recollected anything from the first breathing of the chloroform ; neither of the nausea and vomiting, nor of taking the cup of tea, nor of turning on her side at my request shortly before the birth of the child, nor of the delivery of the child itself. As already remarked, I did not at the time think her wholly insensible ; she heard readily ; answered generally correctly ; and did at once what was desired of her ; and besides, called repeatedly for more chloroform. She recollected every thing done and said from two or three minutes after the child was born. I feel no doubt of her having told me the truth, when she denied all recollection of the labor after commencing the use of the chloroform.

Case 2. Mrs. Y.—In labor with her second child. The former labor had been tedious and painful, especially the second stage. On visiting her, I found the os uteri dilated, but the head rather indisposed to enter the superior strait. The waters soon afterwards escaped, yet there was but slight advance of the head. The pains were rapid yet inefficient. The patient was impatient

under them ; she threw herself about the bed, and was indisposed to exert herself during the pains. Three-quarters of an hour passed in this way, without advancing the labor. The head had fairly engaged in the superior strait, but lay more against the right ilium than presenting in the centre of the strait. I put about half a teaspoonful of chloroform on the sponge and had her inhale it on the occasion of a pain. The next pain she breathed it still more freely, and instantaneously, as it were, there was a change in her behavior. She took hold of the sheet that I had tied to the bed-post and pulled most powerfully (for she was a strong, hearty woman) whenever the pains came on. Slight hysterical symptoms were observable, such as a disposition to weep, and otherwise acting as if she felt distressed about something. She three or four times asked me how long I thought it would be before she would get through, and repeated the question only the last pain but one before the child was born. Not over a minute after the child was born, and while it lay upon the bed crying, she suddenly started and asked quickly, " what is the matter, what is the matter ?" raised her head and looking around added, " why, I have been asleep, haven't I ?" She supposed the crying which awoke her was by her little girl. She declared she did not know when the child was born ; nor was she sensible of any pain after the second inhalation of the chloroform ; nor has she any recollection of asking me when I thought she would get through. The time, from the commencement of the administration of the chloroform until the birth of the child, was twenty minutes. During this time, whenever I noticed a pain coming on, or whenever she showed by her cries (for she cried out some at nearly every pain) or actions any apparent increase of distress, I directed the nurse to hold the sponge to her nostrils for three or four respirations. The recovery was rapid, and without any bad symptoms.

In this case, also, I did not suppose her so entirely insensible to pain as she afterwards declared herself to have been. The apparent suffering, although slight compared to what it had been ; the free use she made of the voluntary muscles ; and the question she often asked me, certainly indicated, at least, a partial knowledge of her situation.

Case 3. Mrs. B.—I commenced the use of chloroform one hour before delivery. The os uteri was nearly to its full dilatation; it was the first child; the woman was of a delicate constitution, highly nervous, and making loud complaints of the severity of her pain. She had no feverish symptoms; her pulse was eighty and regular; she had been unwell for two days with threatened dysentery. It was from twelve to fifteen hours since labor pains had commenced. She breathed of it for a pain or two, as an experiment, and found that it relieved her, and afterwards asked or made signs for it, by raising her hand at the commencement of every pain until delivery. I do not remember that she once failed to do this. When given to her she would breathe of it with the greatest avidity, pressing the sponge to her mouth and nose as closely as I would allow her. Frequently she wanted it (the sponge) made "stronger," that is, more perfectly saturated with the chloroform; once she spitefully threw it from her in disappointment, on its being handed to her without a fresh wetting. A number of times during the hour I asked her to reach me her hand for the purpose of noticing the condition of her pulse. She always complied at once. She would as readily comply when told to change her position or to raise her head to fix the pillows under it. She would frequently say something about the severity of her pain, and how she suffered, and always made more or less complaint with each return, but very moderately in comparison to what she had done before breathing the chloroform. Only four or five pains before the birth of the child, she asked me if she could not be put asleep with it, and made quite insensible to pain, and desired that it should be done. I declined doing so, for my previous experience, judging from the amount of chloroform she had taken, had taught me that it was possible she might not recollect much afterwards. Yet I felt a more than usual uncertainty about it, and a corresponding interest to know how far her sensibility and recollection would extend. I had not the least doubt of a good degree of sensibility, both mentally and physically, as she was apparently sensible; there was no delirium, nor any hysterical symptoms, nor was there any diminution of the force and frequency of her pains, nor of the action of the accessory muscles.

She did not lie in a calm, quiet state after the birth of the child, but then, for the first time, showed signs of mental aberration, by a disposition to loquaciousness, by asking the same question over a number of times, and by making remarks foreign to her condition. She still appeared to understand well enough, for a moment or so, what was said to her, and obeyed directions as well as before. Her movements were quickened, her mind was unusually active, her general expression of countenance was that of excitement and alarm; there was, for a while, frequent and unusually deep gaping; and the orbicularis palpebrarum muscle would also frequently contract for a few seconds at a time, giving her eyes a very wild and unnatural appearance; the pupils were unaffected. The respiration was not affected except in this disposition to take deep inspirations; her pulse had risen, before the conclusion of the labor from eighty beats to one hundred and twenty beats in a minute, and now kept at that number, and perfectly regular. After lying in this state of excitement for some twenty or twenty-five minutes, she suddenly settled into a state of perfect repose, and apparent drowsiness, and soon afterwards came to her full recollection. I was then considerably surprised to hear her declare that she had no recollection of the birth of the child, nor of anything after the third or fourth inhalation, from an hour before delivery to nearly half an hour after this event.

She recovered well from the dysentery, being fully convalescent on the fifth day.

Case 4. Mrs. G.—I commenced the administration of chloroform, before the full dilatation of the os uteri. I kept it up pretty freely for half an hour. She said it relieved her, but did not call for it nor show any of that avidity for it seen in the case just related. Finding her to progress rather slowly, I left her for half an hour. On my return, I was told that she had asked quite earnestly for it. I commenced its use anew, and gave it pretty steadily for one and a-half hour, until the completion of the labor. Once only did I discontinue it for eight or ten minutes, when she expressed a wish to get up and walk the room, hoping to get some relief by so doing. In thus expressing herself, she showed that notwithstanding the use of the chloroform, she was apparently fully sensible of her

pains. These were increased by this, and she soon got on the bed again, and called for more chloroform. This was about all she said unless asked, that showed her appreciation of the relief obtained from the remedy. It was evident to all that her cries were much lessened by the use of the chloroform, yet she cried out about her back at almost every pain, generally placing her hand there the moment it came on. When asked, she said the chloroform relieved the pain, and prevented it from being continuous. She did not show the least sign of aberration of mind, nor of hysterical symptoms. Her pulse remained entirely unaffected. She frequently dropped into a sleep the moment the pains went off. After the birth of the child, she declared that she was not at all sensible of its delivery, neither did she remember anything that had occurred for the last hour and a-half, except of getting up and walking the room.

Her condition after the birth of the child afforded a marked contrast to that of the last case. She lay so very still, although awake, and said so little, that the attendants noticed it as something unusual, and asked if it was the effect of the chloroform. This state continued for an hour, during which time she scarcely spoke unless spoken to (yet she answered all questions promptly and correctly), nor did she appear to take much, if any notice of what was said or done.

This was another case in which I found it impossible to be perfectly satisfied, before the birth of the child, of the actual state of my patient. She would complain so constantly of her pain, apply her hand so promptly to her back, and obey so quickly any directions given her, that I felt that I could not safely make any predictions as to what would be the extent of her intelligence and memory.

These cases seem to me to be very important, from the difficulty and uncertainty in judging correctly of the actual condition of the patient, and, of course, of the propriety of giving more chloroform. If accidents are to occur in the use of chloroform in midwifery, it will be most likely, in such cases as these, from urging the remedy, under a false impression of the actual condition of the patient as to sensibility and intelligence.

The third of these cases is the only one within my experience which has shown any signs of delirium, or any similar symptoms to those described, after the birth of the child.

Second.—Of the effect of chloroform upon the cries of pain.—The prevailing idea is, and naturally enough too, that if chloroform relieves pain, the cries of pain ought also to cease. But, as will be inferred from what has already been said, this is by no means the case, and we should be following a very dangerous guide did we depend upon them to determine whether or not the patient was sensible of her pain. Their existence is certainly an indication of suffering on the part of the system; but the cases given show that the mind does not necessarily take cognizance of them, nor will there necessarily remain any recollection of them afterwards. They then are not good guides, for were we to depend upon them alone, and because they existed, suppose our patient needed more chloroform, we would at once be in danger of giving an over dose, and possibly a dangerous one.

Nevertheless, chloroform does, in almost all cases, greatly subdue and lessen these cries or expressions of pain; and when this effect is being produced, we may be confident of our patient's relief, even if there be no other signs by which to judge of it.

In a few instances, when administered freely, I have seen it quiet every expression and manifestation of pain.

No prediction can safely be made in any particular case as to the precise effect the chloroform will have upon the cries of pain.

Third.—Of the effect of chloroform upon the muscular system.—We see in labor two kinds of muscular action; first, that connected directly with the birth of the child, consisting of contractions of the uterine and accessory muscles, or those concerned in what is called a regular bearing down pain; second, a restlessness whenever a pain is on, seen in some cases, and which often defies all control. The patient cannot or will not lie still but turns from side to side; throws her arms about; draws up or extends her limbs, and seems to have no power of obeying us when we give the triple order to lie still; keep in the breath, and bear down. Neither of these varieties of muscular effort do I

ever try, as such, to control with chloroform. I want the full effect of the first kind of muscular action, and am afraid to give chloroform enough to quiet the second. I am anxious to have my patients exert themselves in any real expulsive effort; and I am gratified to find that chloroform, given in moderate doses, will afford in such a large majority of cases so much, and often such entire relief from pain, and at the same time scarcely interfere with the regular muscular contractions. The efforts will be the same, and their repetition as frequent as without its use.

Given in large doses, I have in a few cases seen all use of the voluntary muscles prevented, and the children born by the contractions of the uterus alone. It has been very interesting to notice, in such cases, with what force the children have been thrown into the world. It really lessens one's ideas (in some cases at least) of the value of the accessory muscles.

In some of the cases, there has been no doubt of the fact, that the moderate use of chloroform has had the effect of lengthening the intervals between the pains, and rendering them less expulsive. One case I have seen where this was so markedly the case as to lead to its discontinuance. I think I could have put off the labor the whole day by it. The patient was with twins, and had not slept of any consequence for nine days, on account of great pain from extreme distention of the abdomen, and inability to lie down. The result was, that the moment she got any relief, she fell into a snoring, apoplectic kind of sleep. This has been the only case I have seen of any decided or continued retardation of labor from the use of chloroform.

The muscular restlessness spoken of, is not always under the control of the moderate doses of chloroform to which I limit myself. I have known it in one instance only, to be instantaneously controlled by it, and regular expulsive efforts to take its place. In the majority of such cases, although not stopped, it will be rendered less violent, and the patient will exert herself more and with better effect. In a few cases, notwithstanding the patient has been rendered totally insensible to all outward impressions, the restlessness was as decided as before. The following is a case in point. It will be seen that chloroform was given until there

was loss of all the mental faculties; no answering of questions; no obeying of directions as to change of position, &c., and no recollection of the labor afterwards; yet it had no effect to control this muscular restlessness, which amounted to quite an inconvenient degree: neither did it notably lessen the cries of pain on the birth of the child.

Mrs. M.—She was in labor with her sixth child. Her health had not been very firm, and I found her quite low spirited. She had never felt so depressed at any previous labor. It did not seem to her that she could live through the pain necessary to give birth to her child, and she was determined, if possible, to get relief by means of chloroform. It was for this purpose that she had chosen me to attend her. “Now, doctor, give me just all you dare to,” was the direction I got from her, when about to commence its inhalation. This was at 4 o’clock A. M. The os uteri had reached nearly its full dilatation, and the pains were getting quite sharp. She was impatient of them, and while they were on she was in constant motion, rolling from side to side, drawing up and extending her limbs so it was quite inconvenient to wait upon her. She said she had not been so in previous labors, and I could only account for it by her loss of self-control, and her general feeling of self-abandonment, regardless of consequences.

I expected to control this restlessness by the chloroform, but was disappointed in it, although, for about half an hour, there was total anaesthesia. When I noticed this effect from its use, I desisted giving more, or making attempts to give enough to stop this restlessness. I knew she did not suffer from pain, and this result was all I sought to obtain. The uneasiness lasted only while the pain was on. She cried out as though suffering, and those unaccustomed to the use and effects of chloroform would have been confident that she did suffer. There was a want of all concert of action between the voluntary and the involuntary muscles. Had there been this concert I think the child would have been born some minutes sooner. The chloroform did not seem to have any effect in preventing this concert, as it was equally wanting before she commenced its inhalation.

The child was born at 5 o'clock. She was, therefore, one hour under the influence of the remedy.

I have never known this restlessness to be increased by chloroform.

Fourth. Of the effect of chloroform upon the pulse.—The general effect has been, that the pulse has remained unaffected by its use. I do not notice in this a temporary rise of ten, fifteen or even twenty beats, which we so often see during the progress of a labor, from a moderate severity of pain to the violent muscular efforts of its conclusion. I allow this latitude to the effect of the labor itself. Making allowance for this, the rule in these cases has been as stated. As, between a rise and a fall of the pulse, the tendency has been almost uniformly to a rise; indeed, I have never known it to fall as low as to sixty beats.

Once only have I noticed a decided rise in the pulse during the administration of the chloroform. It rose from eighty to one hundred and twenty beats in a little over an hour. I, nevertheless, continued its use, but would not do so again. See the case as reported on page 93.

The other cases of rise have been after the conclusion of the labor, and of course, after the discontinuance of the chloroform. In one case, in six hours afterwards, the pulse had risen from ninety-two to one hundred and twenty, and within twenty-four hours after labor, to one hundred and forty. The patient had puerperal fever. (*See the case fully reported in the "Buffalo Medical Journal," vol. 5, page 8.*)

In another case the rise was immediate, from one hundred to one hundred and forty. It was with the most sudden and violent reaction after labor I have ever known. She had chilled violently before I had had time to tie the cord. The chill was quite prolonged. The placenta came away immediately, and with less than the usual flooding. I had the patient well covered; hot things applied to her feet, and gave her moderately of hot sling. The fever after the chill was very severe. Had she been broken out with an intense scarlet rash, her surface could not have been redder. After lying for about two hours in this con-

dition, the fever began to subside, and the pulse to fall. In four hours more, every vestige of fever had gone, and her pulse was below one hundred, and she rapidly and fully convalesced. Not another uncomfortable symptom showed itself. This is the only case of the kind which has occurred to me after the use of chloroform.

In four of the seven cases of flooding, there was a sudden rise of the pulse, corresponding with the severity of the hemorrhage.

Fifth. Of its effects upon the respiration.—An occasional effect of chloroform as I have given it, upon the respiration, is to render it irregular and slow. The patients thus affected have, in a few instances, lain so long without breathing that I have shaken them to start an inspiration. The pulse, as I have in such cases noticed, has been unaffected. When once breathing again, the respiration, for a minute or so, is apt to be irregular, the natural relation of the different acts of respiration being lost.

The interval between expiration and inspiration is unnaturally long. This seldom lasts over three or four respirations, when the breathing goes on naturally again, if more chloroform be not given. No one would push the use of chloroform after seeing the respiration thus affected. It has not been connected with stertor in a single instance of my cases. I look upon stertorous breathing as showing a deeper degree of anaesthesia, and is an effect which I am careful not to produce. This slow breathing does not always depend upon a large quantity being inhaled. I saw it once caused in a marked degree from the inhalation of only fifteen or twenty drops. The patient in her avidity, pressed the sponge so closely to her mouth as to prevent all entrance of air. Three or four inspirations only, were sufficient to establish entire anaesthesia, and this holding of the breath so long as to be painful to me to witness. If such a small quantity will cause such an effect upon the respiration, how cautious ought we to be in the use of larger doses. This is the only change of respiration I have noticed from the use of chloroform, and it is an important one, as evidence of sufficient anaesthesia.

In one instance, where I had produced entire anaesthesia, the patient, a few minutes after the birth of the child, began to make

rapid and forced respirations; some eighty a minute, I should think. It continued for two or three minutes. There were no other nervous symptoms. The pulse all the time (as it had been throughout the labor), was perfectly natural as to frequency, regularity and fullness of beat.

One patient who had had full anaesthesia produced before the birth of the child, complained during that day, of a sense of stricture and oppression of the chest.

In one instance I have smelt it in a patient's breath as late as an hour after delivery. She had been taking it uninterruptedly for five hours. No ill effects were noticed from thus saturating her symptom with it, either to herself or child. She convalesced without a bad symptom, and has continued well since.

I would here remark that I have not unfrequently noticed this irregularity and slowness of the respiration as an effect of chloroform, and it has almost always been coincident with the production of total anaesthesia. On perceiving it, I have always at once discontinued its further inhalation. While having thus frequently noticed this effect upon the respiration, I have, as already stated, never known (with the one exception) a marked rise or fall, or other alteration of the normal character of the pulse during its administration. And, furthermore, in every case of these irregularities of respiration, I have noticed the pulse to be perfectly natural in force, fulness and regularity of beat.

From the consideration of these facts, I look upon the breathing as a better guide in the use of the remedy than the pulse, and I am governed much more by it. An examination of the reports of fatal cases, as seen in the medical journals, will show that when the pulse has been noticed to fail, the patient has generally died. Any approach then to this effect, should by all means be avoided; and I think my observations have been numerous enough to establish the fact of an alteration in the frequency, or regularity, or rhythm of the breathing, as almost uniformly to precede an alteration or failing of the pulse. I can easily imagine how, under the influence of an overpowering dose, the respiration and pulse may give out almost simultaneously, so that

no precedence can be given to one over the other ; but my remarks here are all predicated upon its cautious use in the small doses I have ever been accustomed to administer it.

Sixth. Of other effects from chloroform.—Almost all patients who breathe it lie with their eyes shut, and although perfectly sensible, show little or no disposition to open them, even when answering questions. When this shutting of the eyes is not produced, I have not found them relieved by the remedy. Frequently, when they have been breathing it freely, and got thoroughly under its influence, they do not know when the sponge is removed, and will continue to lie with their mouths open, and breathing rapidly as when inspiring the chloroform. This only occurs when there is entire insensibility ; although unless the use of the chloroform is pressed, it is but momentary.

Once I have known chloroform, although it relieved the labor pains, produce a very unpleasant effect, more distressing the patient said, than the pains of labor. She could not describe it otherwise than that it was like the effect upon her of a dose of opium or a table-spoonful of spirits, both of which always produce a precisely similar effect. While under its influence she could not raise an arm, nor move a limb, nor even speak, to tell me how bad she felt. I saw she refused to breathe more of it, and stopped offering it to her. She soon recovered herself sufficiently to tell how it affected her. There was no noticeable alteration of the pulse ; the respiration was a little slow.

I have met with one woman who could not bear it near her face. “It stifled her,” as she expressed it. She would have been glad to breathe it had she been able.

Two patients to whom I have given it, complained at first, of its making them faint. They were at the time both sitting up. On lying down, no further complaints of the sort were made.

I have seen one case in which the patient described its effect upon her as similar to that from getting intoxicating liquor incautiously left within her reach, when a child.

Another said she felt, when under its influence, precisely as once when magnetized.

I have given it in a number of instances, for the relief of after-pains, when I wanted more prompt relief than I could obtain from morphine or other remedies. In one of the cases of flooding, it answered a very good purpose in quieting my patient until she could be brought under the influence of morphine. I gave it quite freely and frequently for an hour, although there was constant hemorrhage all this time. This was the patient referred to under the head of cases of flooding, who was too ill to be allowed to nurse her child.

I think the remedy is cumulative for a short time, not for over half a minute at the most, and generally not more than fifteen seconds, if given in the small doses in which I generally administer it. Having reached this point of greatest relief, it will be from one to two minutes before the effect passes off. Much will depend, as to the duration of its effect, upon the size of the dose, and the length of time it has been inhaled.

Seventh. Of effects generally attributed to chloroform as judged of by my experience.—1. One of the most important effects attributed by some observers to chloroform, is that of promoting the dilatation of the os uteri and perineum, and of increasing the secretions from the vagina. I regret to say that I have not, in my judgment, met with an unequivocal case of its aiding either of these objects. I have seen cases in which the process of dilatation has been unexpectedly rapid, but I have seen just as many similar cases in which chloroform has not been given. On the contrary, in a number of cases in which I have hoped for, and anxiously expected such a result, the labor has been rendered very tedious from rigidity of the soft parts. Chloroform gave great and satisfactory relief from the pain, but did not otherwise facilitate the progress of the labor.

2. I have never seen it cause any serious headache, and I am not sure I ever knew it to give rise to headache at all. I have known it once to relieve in part, a headache, of which the patient complained more than of the labor pains.

3. In none of these cases have I been certain that it has caused vomiting. There have been some cases among them of nausea and vomiting, but not over the average number.

4. I have been gratified to see so little effect from it upon the lungs. Beyond a slight hacking produced sometimes from too free inhalations on the first attempts at breathing it, I have never known it to cause cough. In two or three instances I have ventured to give it when there has existed, what is called a bad cold, with cough, &c., and always without in any way increasing the cough or cold.

5. I have never had an opportunity of testing its power to control puerperal convulsions.

SECTION III.

RULES FOR THE USE OF CHLOROFORM IN MIDWIFERY, WITH THE DOSE AND MODE OF ADMINISTRATION.

It remains for me now to state the rules which guide me in judging when anaesthesia has been carried far enough, and my mode of administration and dose.

To understand, in the first place, what I mean by anaesthesia being carried far enough, I will repeat here a proposition which I laid down in November, 1848. "The possibility of exhibiting chloroform to a point short of causing insensibility, or in any way interfering with the full use of all the faculties, or with the full play of the voluntary muscles, and yet so benumbing pain as to make it quite easily bearable." (See "*Buffalo Medical Journal*," Vol. 4th, page 339.)

Judged by subsequent experience, this proposition is not broadly enough stated. A large number of cases will come within its limits as it is, and, in the main, it is true. But make it one degree broader. Allow a nearer approach to insensibility, so as to cover cases of partial or momentary loss of the mental faculties, and which would include, as a consequence, cases of an occasional obscuration of the faculties by drowsiness; cases of moderate temporary delirium, and cases of a slight prolongation of the interval between the pains; and we will have an expression of fact as general as any therapeutical law can be made.

By anaesthesia carried far enough, then, I mean cases which will come within this proposition as thus extended. The rules

by which I am governed in its use are those published three years ago.* I take the liberty of copying them into this paper with a few verbal alterations, as my subsequent experience has been entirely confirmatory of their truth and value. A few of them, which are cautions about its use rather than rules for its administration, may be deemed over precise and careful. I confess I now look upon them as such, but my rule has been to err, if I erred at all, upon the side of prudence and absolute safety; and until one becomes perfectly familiar with the use of the remedy, I do not think any of them ought to be widely departed from.

First. When there is delirium as shown by incoherent muttering, or talking about irrelevant subjects, however slight the reference to them may be, or when there are hysterical symptoms, as sobbing, or a disposition to cry, the patient will afterwards be found to have been insensible while these symptoms have lasted. There has not been an instance to the contrary in my experience. The administration of chloroform should be then immediately discontinued, unless the object be to keep the patient in this state, when the quantity given should be lessened.

Second. There are many who will declare at once the relief they obtain, and demand the remedy for almost every pain throughout the labor. In such cases their declarations afford sufficient indications of relief. Others will not tell of their relief, but it *will be noticed* that they do not cry out with the earnestness and sharpness they did before. Their expressions of pain become more like moaning, and they give utterance to them only at the time the pains are on. If they are thus changed in a decided manner, anaesthesia has been carried far enough.

Third. When they fall into a sleep immediately as a pain leaves them, and sleep quietly on until suddenly roused by a renewal of pain, I consider them to be sufficiently anaesthetized, although they may make considerable outcries at the time, or even speak with perfect intelligence. I do not, therefore, make any increase in the dose, but rather diminish it as soon as the effect is observable.

* See "Buffalo Medical Journal," vol. 5th, page 455 to 459.

Fourth. If I notice any positive diminution in the action of the muscular system, I consider the patient sufficiently anaesthetized. But it ought also to be remembered that the reverse of this does not hold true, and that strong muscular action is not incompatible with total anaesthesia. This renders the condition of the muscular system an uncertain means of judging of the real state of the patient.

Fifth. The amount of chloroform you find yourself giving will often afford a good criterion by which to judge of the amount of relief the patient will afterwards express. Used without waste, and in the cautious way I do, half an ounce an hour will almost always be found sufficient to render a patient entirely insensible as to any remembrance of the labor. A patient who did not come clearly out from its effects for half an hour after the conclusion of the labor, used five drachms the hour previous to the birth of the child. I would, therefore, seldom give over this quantity an hour, however great, apparently, their pains might be. From two to three drachms an hour will generally be found to be all-sufficient to keep them tolerably relieved if the pains are not very rapid and sharp. As I seldom give it with the intention of producing full anaesthesia, I rarely exceed that quantity an hour. In cases like the four given under the head of the Influence of Chloroform upon the Mental Faculties, this rule will be the only guide for its perfectly safe administration.

I place the contra-indications to the use of chloroform under the following heads. I have not invariably been governed by them, but consider them as general rules, additional to those already given for my guidance in the use of the remedy.

First. The existence of a rapid pulse and feverish symptoms, have, with a few exceptions, deterred me from its administration. I would also recommend its discontinuance, if any marked acceleration or diminution of the pulse should be observed. Any marked irregularity of the pulse, or stethoscopic signs of diseased heart would be positive contra-indications.

Second. I have, in four or five instances, where the patient has been flushed and hearty, delayed giving it until after vene-

section, looking upon plethora of the circulating system as contra-indicating its use. I would not be understood by this, that I have ever bled under the sole idea of making the administration of chloroform more safe. I have always, on the contrary, let the employment of venesection depend upon my judgment whether the patient would not do better for it, entirely irrespective of other considerations; her own comfort and safety being the objects sought. Having secured this, if I thought she could be made still more comfortable by the use of chloroform, I have not hesitated to administer it.

Third. Diseased lungs have always been deemed a contra-indication. "Weak lungs," as they are called, have not always with me, forbid its employment. How far subsequent experience may alter or vary this rule, I will not venture to predict.

Fourth. If on trying it, the patient does not breathe it readily and freely, nor utter any expressions, or show other signs of relief, I should recommend its discontinuance.

Fifth. A few times I have seen reason in the course of the labor, and after I had commenced the use of chloroform, to change my prognosis from a favorable to an unfavorable one. This fact has generally led me to discontinue its use, and always as the result has proved, needlessly so. I did not wish to hazard the possibility of the unfavorable result being laid to the chloroform, which would very naturally be the case, it being a new remedy. So a prospect of difficulty and danger has been with me, a contra-indication to its further use.

Sixth. Another contra-indication is afforded in the cases of retardation of labor from a large-sized head, or from locked head. We know that in some cases at least, chloroform will lessen the full contractile force of the voluntary muscles. Now, before proceeding to the use of instruments, or administering ergot, I would discontinue the chloroform to see if the patient might not make better progress without it. If not, its use might be resumed, with such other remedies as the case might demand.

Seventh. We sometimes see patients whose last pains are so very rapid and forcible that they hardly have time to get breath

between them. The whole face is greatly congested, and without doubt the brain is similarly affected; and so quickly do the pains follow each other, that this congestion does not disappear in the intervals. I have in such cases, great doubts of the propriety of commencing then, for the first time, the administration of chloroform, and generally consider such a state of things to contraindicate its use.

Eighth. Any objection to the use of the remedy, on the part of the patient, or by her husband, ought always to be a sufficient reason for not using it. It should never be urged upon any one. If the simple expression on my part, that there is a remedy for the pain my patient is suffering, and that I consider it safe and prudent to try it, does not cause her to ask for it or about it, I seldom say anything more, but let the labor go on without it.

Of the mode of administration and dose.—I commenced the use of chloroform, decidedly influenced by the opinion of Prof. Simpson, that it was better and safer to give a full dose (at least a drachm), and at once produce a decided effect, than to give it in smaller quantities, repeated as occasion might require. I gave it in this way to the first eight cases, speedily rendering them all totally insensible, and continuing them thus until the birth of their children. But the ninth case (in April, 1848) was one in which I gave it nearly every pain for three-quarters of an hour, without causing more than a momentary loss of consciousness, and yet with great relief to pain. This demonstrated to me so clearly, the possibility of giving decided relief without affecting the intelligence of the patient, and seemed to me so preferable to the course I had adopted, that I determined thereafter, except for especial reasons, to seek that medium, of which this case afforded so good an example. I accordingly arranged my doses to produce this effect, and instead of giving nearly drachm doses, I at once fell off to thirty drops, as the largest dose I would venture to give. This is why such a small proportion of my cases have been fully anaesthetized at the time of the delivery of the children.

I have always used the sponge from which to give chloroform. It is a small piece, lightly stitched to the centre of a piece of oiled

silk some five or six inches square. The oiled silk prevents a too free evaporation and waste while the patient is breathing it; and by being wrapped around the sponge, accomplishes the same object when she is not inhaling from it. By this care in its use, I am better enabled to judge of the quantity I am actually giving to a patient, and thereby to introduce more precision into its use, and precision gives safety.

I took the precaution, the first time I ever administered chloroform, of cutting down the sponge to such a size that it would hold just a fluidrachm of chloroform, when filled to saturation. By this means an over dose cannot incautiously be given. I very rarely fill the sponge, but generally have found it necessary only about to half fill it. If this quantity be given on the recurrence of every pain, and the patient breathe freely of it, she will almost inevitably soon become entirely anaesthetized.

The doses, as I give them, are, 1st. Fifteen to twenty drops, a small dose; 2d. Thirty drops, the ordinary or medium dose; and 3d. A fluidrachm, the full or extraordinary dose. Whatever the dose, I manage so to hold it, as to have the sponge just off from the mouth, with the silk but lightly spread over the face, so the air can get free admission. Holding it in this manner, I instruct the patient to breathe freely and deeply, much as one breathes after some sudden exercise, until I see some indications that she has enough. As my object generally is to relieve pain without affecting the intelligence, I much prefer the moderate, or small dose. If the pains recur rapidly, I use the small dose. I have already given the rules by which I am governed in judging when it is safe to give it, and how far to carry it.

I am careful not to give over half an ounce an hour. I always prefer to give it just as the pain is coming on. The patient ought to be instructed to inform you of its earliest accession; and if the sponge be immediately applied to the mouth, she will generally get sufficiently under its influence before the pain gets to its height, to have it decidedly benumbed. If not given thus promptly, the opportunity may be lost of giving it at all; for such, often will be the disposition to hold the breath while bearing down, and so sudden will be the inspirations, that it cannot

be breathed. So we ought to be ready to give it at a moment's warning ; and if the patient be sensible enough to give us notice of the coming of a pain, and will breathe freely of it, everything will be found to proceed to the satisfaction of all. But if she will not do this, or cannot control herself enough to lie still and breathe of it until she feels relieved, the result becomes uncertain, and often unsatisfactory. A great deal often depends upon the experience and tact of the physician, as to the amount of relief his patient will obtain ; that is if he limits himself to the small doses I have indicated. If he is careless, he will be very apt to give too much ; if over cautious, not enough ; and in either case he will put down his experience and authority as unfavorable to the use of chloroform in midwifery.

I always prefer to have the patient breathe of it principally through the mouth. It is breathed of more freely and easily. The sponge ought to be so held as not to touch the lips, or they will be apt to become excoriated from the contact of the chloroform. Some patients breathe of it with such avidity that they will, if allowed to, press the sponge so close to the mouth as to prevent the ingress of air. This ought not to be allowed. It might be dangerous if the dose happen to be a full one, as they are so much sooner and more deeply affected when they breathe of it without the free admission of air. I have noticed this fact frequently.

I am careful to have my patients lying when I give it. It is by far the best position. If, after having breathed of it, they wish to get up, I first discontinue it and then make them lie some five minutes or more before acceding to their wish.

I would urge the propriety, at first, of giving it slowly and in very small doses, so as to accustom the patient to its use. I do not, for the first few inspirations, ever give it with the expectation of relieving pain. But after they have tried it, and, as it were, got acquainted with it, I give larger doses, of which they breathe freely and without apprehension, and thus obtain the desired relief. I would suggest whether, as ordinarily given, the time of inhalation is not too long and the dose too large.

Finally, while I would urge upon the profession a more general adoption of the remedy for the relief of the pains of labor, especially in the more severe and protracted cases, I confess that many, if their experience be like mine, will not exactly like the care and responsibility of its administration, for if, after using it, a patient has any kind of sickness or uncomfortable sensation, or sore breast, if, indeed, their recovery be not most easy, rapid and complete, some officious friends will be found ready to hold up their hands in horror at what has been done, and most positively ascribe every unpleasant feeling to the deadly influence of the chloroform.

But, beyond a dislike of being unjustly censured, and a feeling of disgust and humiliation in finding the assertions of ignorance and prejudice pronounced with such an air of wisdom, and believed in by the thoughtless with such an easy credulity, these considerations have but little effect upon me; and if I have a patient suffering severely, and without any contra-indications to the use of the remedy, I never hesitate to recommend it to her. Such is my confidence in the entire safety of its prudent administration; such is the truly wonderful relief which can be obtained with it, so completely in most cases, and partially in almost all, that there is no remedy in our materia medica which I give with a sense of greater security, or a feeling of more profound satisfaction.